GAMBRILL HOUSE TULIP POPLARS
(Gambrill House *Liriodendron tulipifera*)
NPS Witness Tree Protection Program
Monocacy National Battlefield
Behind 4801 Urbana Pike
Front of Gambrill House
Frederick vicinity
Frederick County
Maryland

HALS MD-11
MD-11

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN LANDSCAPES SURVEY
National Park Service
U.S. Department of the Interior
1849 C Street NW
Washington, DC 20240-0001

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GAMBRILL HOUSE TULIP POPLARS
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HALS No. MD-11

Location:	Monocacy National Battlefield, behind 4801 Urbana Pike, front of Gambrill House, Fredrick vicinity, Frederick County, Maryland
Owner/Manager:	U.S. Government, National Park Service
Present Use:	Ornamental and shade trees
Significance:	The Gambrill House Tulip Poplars (*Liriodendron tulipifera)* are significant due to their association with James H. Gambrill, his mining operation, and the large Second Empire-style home he built ca. 1872.
Author & Discipline:	Jonathan Pliska, Landscape Architectural Historian, 2007
Project Information:	The Witness Tree Protection Program was a pilot project undertaken by the Historic American Landscapes Survey and the National Capital Region of the National Park Service. The principals involved were Richard O'Connor, Chief, Heritage Documentation Programs; Paul D. Dolinsky, Chief, Historic American Landscapes Survey; Darwina Neal, Chief, Cultural Resources, National Capital Region; Jonathan Pliska, Historian, Historic American Landscapes Survey; Jet Lowe and James Rosenthal, Photographers, Heritage Documentation Programs.

PART I. HISTORICAL INFORMATION[1]

James H. Gambrill was born in Howard County, Maryland, in 1830 into a large, wealthy family that operated a number of mills in the Baltimore area. Gambrill took his place in this "milling dynasty" in 1855, when he purchased the Araby Mills complex located within the boundaries of the present-day Monocacy National Battlefield. The venture proved highly successful, and allowed Gambrill to construct a stately Second Empire-style mansion overlooking the mill ca. 1872. Edgewood, as the house was originally named, remains one of the largest single-family homes ever built in Frederick County,

[1] Adapted from "Gambrill Mill (Araby Mill)" and "Gambrill House (Edgewood)," in *Monocacy National Battlefield* (Frederick, Md.: U.S. Dept. of the Interior, National Park Service, Monocacy National Battlefield, 25 July 2006), http://www.nps.gov/mono/historyculture/gambrill_mill.htm; http://www.nps.gov/mono/historyculture/gambrill_mansion.htm (accessed 20 December 2007).

and one of its very few full-scale Second Empire structures. Today the mansion is known as the Gambrill House and serves as the headquarters for the National Park Service's Historic Preservation Training Center. During James H. Grambrill's ownership, however, it served as a means of showcasing the successful businessman's wealth and social standing. The mansion was also a highly visible example of the area's rebuilding efforts following the Civil War, as Gambrill himself had sustained damages when the Araby Mill complex was appropriated by Union forces during the July 1863 Civil War Battle of Monocacy. Apart from the mansion's obvious architectural sophistication, it featured an elegant double parlor, intimate library, wine cellar, and spacious dining room with built-in stage. Seven fireplaces bearing imported Italian marble mantels were also built into the mansion, as was a plumbing system that provided hot and cold running water and sewage disposal, both of which were uncommon design features at that time. A photograph taken shortly after the mansion's construction shows a pair of small tulip poplars flanking the main entrance, believed to have been planted around this time. Today, some 125 years later, the trees have grown considerably and are considered the most prominent remnants of Gambrill's original landscape design, which included a sweeping lawn, summer houses, and additional tree plantings.

PART II. BIOLOGICAL INFORMATION

Liriodendron tulipifera, commonly known as the tulip poplar, is one of two species within the genus *Liriodendron* classified under the magnolia family Magnoliaceae.[2] Since the magnolias are genetically far removed from poplars, the common name of tulip poplar is actually a misnomer, with tulip tree and tulip magnolia more accurate common names.[3] The species is one of the largest and most distinguishable trees of the eastern United States. It is characterized by clean-cut, glossy, fiddle-shaped leaves, which are described as truncate, or ending abruptly, as if cut off. The shape gives rise to a less often used common name, the saddle-leaf-tree.[4] These deciduous leaves vary in size from 3" to 8" across and long, contain three to four short, bulbous lobes, and are arranged on alternate sides of branches. They exhibit pinnate venation, where lateral veins diverge on either side of one large central vein, or midrib. Bright green in the summer, the leaves turn yellow or golden yellow in the fall. This superb coloration has caused one leading horticulturist to describe *Liriodendron tulipifera* as a "truly aristocratic tree."[5]

Like its leaves, flowers are useful in identifying tulip poplar specimens. Trees typically produce flowers for the first time between fifteen and twenty years of age, and may continue production for 200 years. However, the species is only in bloom for two to six

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[2] Liberty Hyde Bailey and Ethyl Hyde Bailey, "*Liriodendron*," in *Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada*, revised and expanded by the staff of the Liberty Hyde Bailey Hortorium, Cornell University (New York: Macmillan Publishing Co., Inc., 1976), 669.
[3] As is yellow poplar, another common name. See G. H. Collingwood and Warren D. Brush, *Knowing Your Trees*, ed. Devereux Butcher (Washington, D.C.: The American Forestry Association, 1964), 258.
[4] Ibid., 259.
[5] Michael A. Dirr, Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses, 5th ed.(Champaign, Ill.: Stipes Publishing L.L.C., 1998), 572-73.

weeks from April to June, depending on location, weather conditions, the size and age of each individual, and the number of flowers per tree. Tulip poplar bears a diagnostic singly occurring, perfect flower measuring approximately 1.5" to 2" wide, with six petals varying in color from a light yellowish green around the edges to a deep orange band at the center.[6] As indicated by its botanical name, these flowers bear a resemblance to tulips. Pollination is by insect and must occur very quickly, as a flower's receptive period normally lasts only twelve to twenty-four daylight hours after opening. Following successful pollination, seed production begins. These seeds are encased in samaras, indehiscent winged fruits, which develop in cone-like aggregations measuring 2" to 3" long x ¾" wide. Easily identifiable, they turn brown in October and dispersal may begin by November and continue through winter.[7] Samaras may be scattered by the wind to distances equal to four or five times the height of the parent tree.[8]

This height is typically 70' to 90' feet, although the species can grow to 150' and greater, with individuals recorded at 198' and 200'. Some forest grown trees grow 80' to 100' tall before branching, and all tulip poplars concentrate growth vertically rather than horizontally. Accordingly, average sized trees attain relatively small crown spreads of 35' to 50', but large trunk circumferences of 75" to 190". This upright habit, combined with the deeply furrowed gray bark of older trees, further characterizes the species and aids in identification.[9] The Gambrill House Tulip Poplars have not been measured, but appear to be large specimen trees. Planted ca. 1872, they are approximately 134 years old. Although venerable, the trees barely qualify as old in the botanical sense, as the species' age at natural death is typically 200-250 years, with some trees living up to 300 years.[10]

Because *Liriodendron tulipifera* is a very large, grand tree when fully grown, it is most suited to expansive, open environments. It is generally not well-suited to small residential properties or urban streets, although given sufficient space trees may be successfully planted along roadways since branches emerge well above the level of vehicular and pedestrian traffic. A marked susceptibility to elevated ozone levels and aerosol salts, often applied to roads during the winter months, further decreases tulip poplar's compatibility with the built environment. The species is, however, extremely hearty when planted in less urbanized settings, and exhibits a wide range of soil tolerances – highly acidic to slightly alkaline, sand to clay, and well drained to occasionally wet.

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[6] Donald E. Beck, "Yellow-Poplar," in *Silvics of North America: 1. Conifers. Agricultural Handbook 654*, online ed., tech. coords. Russell M. Burns and Barbara H. Honkala (Washington, D.C.: U.S. Dept. of Agriculture, U.S. Forest Service, 1990), 805, http://www.na.fs.fed.us/spfo/pubs/silvics_manual/volume_2/silvics_v2.pdf (accessed 13 June 2006).
[7] Dirr, 573; Liberty Hyde Bailey and Ethyl Hyde Bailey, "Samara," in *Hortus Third: A Concise Dictionary of Plants Cultivated in the United States and Canada*, revised and expanded by the staff of the Liberty Hyde Bailey Hortorium, Cornell University (New York: Macmillan Publishing Co., Inc., 1976), 1222.
[8] Beck, 806.
[9] Collingwood and Brush, 259; Dirr, 572; John Dickerson, "Plant Fact Sheet: Tulip Poplar, *Liriodendron tulipifera*," in *PLANTS Database* (Washington, D.C.: U.S. Dept. of Agriculture, Natural Resources Conservation Service, National Plant Data Center, 5 February 2002), http://plants.nrcs.usda.gov/factsheet/pdf/fs_litu.pdf (accessed 23 June 2006).
[10] Beck, 810.

Liriodendron tulipifera is largely free of serious threats from diseases and pests. However, trees are susceptible to verticillium wilt, a disease spread by the soil-borne fungi *Verticillium albo-atrum* and *Verticillium dahlia*, which causes wilting and death among infected leaves. Severe infections may eventually kill trees, but the disease does not typically reach this level. More often a variety of canker diseases infect the branches, causing some dieback but posing little threat to overall tree health. Likewise, aphids build up in large numbers and secrete a sugary liquid known as "honeydew." Although honeydew clogs leaf pores and encourages the growth of a black, sooty mold, the effect is largely cosmetic with little permanent damage done.[11]

The Gambrill House Tulip Poplars remain in place today, with one tree in good condition and the other fair. Both were pruned in fall 2005.[12] Given the species' aversion to small spaces, they will likely not grow as large as specimens planted in open environments, but as yet their proximity to the Gambrill House has not posed a threat to the stability of the mansion or the health of the trees themselves.

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[11] Edward F. Gilman and Dennis G. Watson, Liriodendron tulipifera: *Tuliptree* (Gainsville, Fla.: University of Florida, Institute of Food and Agricultural Sciences, November 1993), http://edis.ifas.ufl.edu/ST363 (accessed 12 June 2006); Jeffery L. Reimer and Walter Mark, *SelecTree: A Tree Selection Guide* (San Luis Obispo, Calif.: Urban Forest Ecosystems Institute, 2004), California Polytechnic State University, http://selectree.calpoly.edu (accessed 21 June 2006).

[12] Joy Beasley, Cultural Resources Program Manager, Monocacy National Battlefield, to Jonathan Pliska, electronic mail, 19 December 2007.